

Title (en)

Multi-fuel co-injection system and method for internal combustion and turbine engines

Title (de)

Koinjektionssystem für verschiedene Brennstoffe und Verfahren für Verbrennungs- und Turbinenmotoren

Title (fr)

Système de co-injection multi-carburant et procédé de combustion interne et moteurs de turbine

Publication

**EP 2426335 A1 20120307 (EN)**

Application

**EP 11179407 A 20061124**

Priority

- EP 06838394 A 20061124
- US 73959405 P 20051126

Abstract (en)

An improved multi-fuel supply and co-injection system and method for powering internal combustion and turbine engines, whereby various combinations of fuels, both liquid and gaseous, may be mixed together and fed into the system, under the real-time control of a microprocessor responding to a variety of sensors and acting on a variety of control devices, all working together in a manner designed to enhance the utilization of the thermal content of the various fuels, and in particular to enhance the combustion efficiency and increase the power output while decreasing the consumption of fuel, calculated both by quantity and by cost and whereby the liquid fuel lubricates the moving parts of the injection system.

IPC 8 full level

**F02B 43/00** (2006.01); **F02D 19/08** (2006.01)

CPC (source: EP US)

**F02B 69/02** (2013.01 - EP US); **F02C 7/22** (2013.01 - EP US); **F02C 9/40** (2013.01 - EP US); **F02D 19/0605** (2013.01 - US); **F02D 19/0644** (2013.01 - EP US); **F02D 19/0647** (2013.01 - EP US); **F02D 19/0652** (2013.01 - EP US); **F02D 19/0665** (2013.01 - EP US); **F02D 19/0678** (2013.01 - EP US); **F02D 19/0684** (2013.01 - US); **F02D 19/081** (2013.01 - EP US); **F02M 43/00** (2013.01 - EP US); **F23K 5/00** (2013.01 - EP US); **F02D 19/0628** (2013.01 - EP US); **F02D 19/0671** (2013.01 - EP US); **F23N 2237/08** (2020.01 - EP US); **Y02T 10/30** (2013.01 - EP US)

Citation (applicant)

- GB 2413824 A 20051109 - STATOIL ASA [NO], et al
- US 7040281 B2 20060509 - CRAWFORD JOHN G [CA], et al
- US 7019626 B1 20060328 - FUNK WERNER [US]
- EP 1211407 A2 20020605 - TOYOTA MOTOR CO LTD [JP]
- DE 19609799 A1 19970918 - MTU FRIEDRICHSHAFEN GMBH [DE]
- US 5125367 A 19920630 - ULRICH ARMANDO [CH], et al
- US 6866756 B2 20050315 - KLEIN DENNIS [US]
- US 27784102 A 20021022
- US 4412512 A 19831101 - COTTELL ERIC C [US]

Citation (search report)

- [A] DE 102004011414 A1 20050428 - WINKELMANN KARLHEINRICH [DE]
- [A] US 2004089262 A1 20040513 - TAMURA MASAMITSU [JP], et al
- [A] US 5024195 A 19910618 - PIEN PAO C [US]
- [A] US 4742801 A 19880510 - KELGARD ERIK [CA]

Cited by

DE102012209566A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

**WO 2007062217 A2 20070531**; **WO 2007062217 A3 20070823**; AT E533937 T1 20111215; CA 2630927 A1 20070531; CA 2630927 C 20150804; DK 1969217 T3 20120220; EP 1969217 A2 20080917; EP 1969217 A4 20091111; EP 1969217 B1 20111116; EP 2426335 A1 20120307; EP 2426335 B1 20130508; US 2009320789 A1 20091231; US 2015114351 A1 20150430; US 7861696 B2 201110104; US RE45413 E 20150317

DOCDB simple family (application)

**US 2006045399 W 20061124**; AT 06838394 T 20061124; CA 2630927 A 20061124; DK 06838394 T 20061124; EP 06838394 A 20061124; EP 11179407 A 20061124; US 200613732563 A 20061124; US 201514590583 A 20150106; US 8528406 A 20061124